HOME OFFICE

STUDIES IN THE CAUSES OF DELINQUENCY
AND THE TREATMENT OF OFFENDERS

3

DELINQUENT GENERATIONS

A paper based on a communication to The British Association for the Advancement of Science (Section J) at their meeting in Glasgow, 1958

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PREFACE

The late Miss Margery Fry was for many years interested in the amount of delinquency, as indicated by the figures in *Criminal Statistics*, among children born before and during the war, and suspected that the year of birth was closely associated with the delinquency rate. But, because of the fluctuations in the figures from year to year and from age to age, she did not succeed in solving the technical problem of demonstrating this statistically.

Now, by ingenious processes of standardisation, Mr. Wilkins has overcome the statistical difficulties and shows in this short note that Miss Fry was right and that a particular generation of children has had unusually heavy delinquency rates. Children born between 1935 and 1942 have been more delinquent over the whole post-war period than those born in any other seven-year period. Moreover, the highest delinquency rates have occurred among those children who were four or five years old during some part of the war, and this suggests the possibility that disturbances at such ages may have a particularly harmful effect. The interest of these findings is increased by the fact that they apply in a similar way to both Scotland and England, notwithstanding that the rates of crime at different ages are not the same in the two countries, and that the type of disturbance caused in Scotland by the war was different from that in many parts of England.

Another finding of this investigation is that youths aged between 17 and 21 in 1955 and onwards, who would have been expected because of their years of birth to be exceptionally delinquent, have in fact been even more delinquent than could have been foretold by the year of birth analysis. Either some factor peculiarly conducive to delinquency among young men has been operating during the past few years, or else the influences that made this a delinquent generation even at younger ages have a further accretion of effect when adolescence is reached.

Research of this kind, which might well be greatly extended using statistics already published or obtainable without great difficulty, is believed to have value in suggesting hypotheses about the causes of delinquency, which could later be tested using methods more closely related to individual offenders. This paper, for instance, suggests among other things that more investigation might be made of the effect of disturbances and separation from parents at ages such as three, four or five years.

T. S. Lodge

Director of Research

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Note.—References in the text to *Criminal Statistics* are to *Criminal Statistics, England and Wales*, published annually for the Home Office by Her Majesty's Stationery Office.

DELINQUENT GENERATIONS

Statement of the Problem

1. It has long been the opinion of many social workers and sociologists that evacuation and other disturbances of the lives of young children during the 1939–45 war would have a lasting effect upon the behaviour of these children. So far as is known this has not been confirmed statistically.

2. Some theories of child development lead to an expectation of a greater frequency of behaviour defects in the later lives of children born during years of stress involving abnormal family circumstances. For example, the conditions which Bowlby(1) described as "maternal deprivation" applied to some of those born during the war while the circumstances classified by Andry(2) as "paternal deprivation" applied to many more. Although Andry and Bowlby differ in the parent selected and in the age of the child at the period they believe to be critical, both these writers and many others would agree that those who were young children in war time would be more likely to behave abnormally in later life. In war time the family circumstances of a large proportion of the population are abnormal and this proportion may be large enough for the effects of such conditions to be noticeable in certain national statistics at a later date.

3. Delinquency is a manifestation of behaviour abnormality which (so far as it is detected) is well documented, and the criminal statistics are now available for a period long enough to justify an attempt to discover whether the war time conditions did in fact have a disturbing effect upon those who were then young children. Unfortunately it is not a simple matter to identify the presence or absence of any such effect. The birth rate directly affects the numbers of persons who in any subsequent year are exposed to the risk of committing offences, and thus a greater number of offenders found guilty in any age group in any year may mean only that there were more persons in that age group.

4. The research reported in this paper began as an examination of factors which might assist in making forecasts of the future demand for different penal treatment facilities. The main factor considered was the "bulge" in the birth rate. The "bulge" is often regarded as beginning in 1946 or 1947, but in fact 1947 was the peak year and births were high for some years before and after this.

5. It was clear that the provision of accommodation for offenders should be estimated in terms of the "bulge". But this was not all. Part of the "bulge" occurred before the end of the war and it had been suggested that children born during the war might be more crime-prone than others. Any such effect of the conditions in the year of birth would be superimposed on the effect of the "bulge" in the birth rate, so that estimates of crime based only on the birth rate would be too low.

6. *The main object of this paper is to examine and test the theory that children born in certain years (for example, during war-time) are more likely to commit offences than others, and that this tendency remains from childhood to early adult life.*

Data Available

7. Criminal statistics were, at the time of carrying out this study, available in a form suitable for the analysis proposed, from 1946 to 1957. The lowest age of criminal responsibility is age eight. Thus those born in 1938 were first exposed to the risk of being found guilty of offences at some time during 1946. Similarly those born in 1939 became first exposed to this risk during 1947. It was possible to examine statistics of the numbers of persons found guilty of indictable offences for the years 1946 to 1957 for each of the birth years 1925/6 to 1948/9. This period covers the war years and a short time beyond the peak of the "bulge". It is convenient to display these figures in a rectangular table with the ages of the offenders at the top and the years in which they were found guilty down the side. Table 1* reproduces these data from Criminal Statistics.

Method of Analysis

8. It is, of course, not possible by simple direct comparison of crime rates to say whether some birth years are delinquency prone. Several factors obscure the effect, if any, of year of birth. In dealing with problems of this kind it is conventional to postulate that the effect does *not* exist, and to set up a system of analysis such that, in that case, the figures derived will not differ very much from zero. If the resulting figures differ widely from zero, the proposition (that there is no effect) is not sustained. Before this type of analysis can be carried out there are a number of considerations that must be examined. These will first be taken singly and later their joint effect will be dealt with. Some specific birth groups also will be examined, and a general solution will follow.

Considerations

(*a*) *Numbers at risk*

9. The numbers of offenders are, of course, in some measure a reflection of the numbers of persons exposed to risk. This factor may be eliminated by relating the numbers found guilty to the population involved. For this purpose the mid-year population estimates published by the Registrar-General for ages eight to twenty-one years seem to be the best basis for the calculation of rates. Rates are expressed for 100,000 of the population of each age. The mid-year population figures are reproduced as Table 2* and the rates per 100,000 (Table 1 figures divided by Table 2 figures times 100,000) are shown in Table 3*; in the remainder of this paper these rates are referred to as "crime rates".

(*b*) *Numbers and rates*

10. Before the general effect of the relationship between numbers and rates is dealt with it is interesting to examine the crime rate for eight-year old offenders over the years 1946–1957 (first columns of Tables 1 and 3). It will be seen that it has fallen quite sharply in recent years. This fall in crime rates has taken place

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* *See* Appendix I.

at the same time as the rise in the population in this age group. The two sets of figures are given below:

Year	*8 year old offenders crime rate (male)*	*Population of 8 year old males*
1946	426	295
1947	435	295
1948	517 (largest)	288
1949	487	272 (smallest)
1950	488	294
1951	479	322
1952	377	339
1953	368	336
1954	291	341
1955	228 (smallest)	439 (largest)
1956	246	392
1957	290	365

The tendancy for crime rates in this age group (eight year old males) to fall as the population at risk increased is interesting ($r = -0 \cdot 94$), and further study is being made of this phenomenon. For the purpose of the present analysis, however, this interaction, whatever its explanation, is only a disturbing factor that must be removed before other factors, which it masks, may be clearly seen. It is, in any event, only a post-war feature related to the "bulge" in the birth rate; there is a tendency for the correlation to drop as the birth year moves away from the "bulge" and it shows a tendency to be in the reverse (i.e., positive) direction for those born before 1939.*

11. This phenomenon may be the result of one of several factors or of a combination of factors. As an example, one factor might be that people who were having large families after the war, differed in some manner associated with delinquency, such as social or economic status, from those who were having large families before the war. There may be some other possible and equally acceptable explanation or several independent factors may be concerned.

12. The fact that for some birth years the crime rate is negatively correlated with the numbers at risk, whereas in other birth years the correlation is positive, raises a technical point to which it will be necessary to refer later when a general solution is attempted.

Specific Birth Groups

13. Before going into a general solution it is possible to illustrate the nature of the apparent birth group effects by considering two specific birth years. It is interesting to note that in 1948 eight year old boys showed the worst crime rate for that age in any of the years studied (rate 517—*see* Table 3) and in 1957 seventeen year old boys showed the highest crime rate for that age (1,780—*see* Table 3)—and *that these boys represent the same birth years.* If the influences affecting the crime rate for eight year old boys were serious influences acting on the personality of the young then the effect should be observable also at later

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* The change in the pattern of the correlations, as here suggested, is a smooth trend. At present, only an analysis based on approximations is available, and more work needs to be done before this further research is published. No matter what results may emerge from further study, the work reported in this paper will not be affected.

ages. In fact this birth group shows a fairly consistent tendency to be associated with high crime rates at all ages. For eight year old males the average rate over the twelve years was 386 but this birth group recorded 517. At age nine, the average rate was 773, but the rate for this birth group was 949. These results are shown in the following analysis for all ages up to seventeen years.

Age	*Crime rate at the age stated for males 8 years old in 1948*	*Average rate for all birth groups at the stated age*	*Percentage above or below average*
8	517	386	34
9	949	773	23
10	1,399	1,113	26
11	1,734	1,411	23
12	1,908	1,688	13
13	1,926	1,976	3
14	1,975	2,143	8
15	1,451	1,628	− 12
16	1,509	1,521	− 1
17	1,780	1,396	27

14. In only two years did this birth group show a crime rate below or equal to the twelve year average for the age through which they were passing.

15. A similar result is obtained for the boys born a year earlier, namely, those who were nine years old in 1948. An analysis similar to the one above traces this birth group:

Age	*Crime rate at the age stated for males 9 years old in 1948*	*Average rate for all birth groups at the stated age*	*Percentage above or below average*
8	435	386	13
9	990	773	28
10	1,284	1,113	15
11	1,667	1,411	18
12	2,102	1,688	24
13	2,270	1,976	15
14	2,115	2,143	− 1
15	1,404	1,628	− 16
16	1,324	1,521	− 15
17	1,434	1,396	3
18	1,617	1,117	45

16. Both these birth groups were better than average during their 15th and 16th year, but reverted to their more usual pattern at seventeen or eighteen years of age. This is a very odd fact for which there is no obvious explanation. We may, however, look at this result in a different way. The 15th and 16th years during which these birth groups were less involved in crime than the average for the twelve years, were years when the total crime rate for *all* age groups from 8–20 was below the average. It is possible that *in relation to the lower total level* of crime in these years, these birth groups were still worse than average.

Standardisation by Crime Patterns

17. If an allowance is made for the general crime rate for the years when crime rates in all age groups were less than average for the twelve years, the two birth groups discussed above do show crime rates above average throughout—from their 8th to 17th/18th year of age. This observation in these specific cases seems likely to be a general effect, thus it will be necessary to make a general adjustment for purposes of a general solution. Accordingly all analyses for age groups will be related to figures which make an allowance for the different volume of crime cleared up in different years by using the total of persons found guilty in the age range 8–20 years inclusive. This seems logical because it may be argued that variations in the total amount of crime detected and related to offenders of different ages may be due to factors outside the range of the problem to which this analysis is directed. For instance, the different level of juvenile crime in different years may, in part, be due to different proportions of crime recorded and cleared up, and this in turn be due in part to variations in police activity. In the current analysis these fluctuations, whatever their cause, may obscure the evidence of age differences and birth group differences.

General Solution (Males, England and Wales)

18. As was noted in the specific case of two birth groups, both age and the general crime pattern over different years affect the analysis; earlier the effect of different numbers of persons in different ages exposed to risk was allowed for by using crime rates. A general solution requires that these three factors are taken care of simultaneously. There is one further consideration: the crime rate is not independent of the population at risk (*see* paragraph 8). This fact makes it necessary to standardise by the use of rates instead of the numbers of persons. A slightly different result not affecting the general conclusions is obtained by this method from that which would have been obtained by the use of the more usual techniques of calculating averages ("expectations").* The method of standardisation used is described in Appendix II.

19. The general solution for males in England and Wales is given in Table 4 (Appendix I). In this table the crime rate expected after allowing for the disturbing influence of the factors discussed above (namely, age, population, crime pattern, age × population interaction) is made equal to zero, and accordingly it is possible to show crime rates in excess of the expected rate as positive and crime rates below the expected rate as negative figures. To further simplify presentation the difference has been expressed as a percentage based on the expected rate.

20. In accordance with the method outlined in paragraph 8, if all birth groups were similarly prone to crime, the plus and minus figures in Table 4 would be unsystematically arranged (i.e., at random). Some variation would be expected due to chance factors, but chance is not systematic in its effects. An inspection of Table 4 reveals marked patterns of plus and minus signs, clearly non-random. All the rates in the whole bottom left hand corner of the table are below "expectation". We accordingly conclude that some birth groups are less crime prone than others.

21. It will be realised that the diagonal cells of Table 4 represent a particular birth group. For example, the first cell in the first row (8 years of age in 1946),

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* For this reason the overall sum of the O–E tables is not zero.

and the second cell in the second row (9 years of age in 1947) refers to the same birth group. A person born on the first of January, 1939, would be eight years of age (last birthday) for one year up to 31st December, 1947, and a person born on the 31st December, 1939, would be eight years old during 1948. It is possible to re-write Table 4 to relate to birth years, but due to the fact that birth may occur at any time during a year and the age at finding of guilt during a year may relate to any time during the year, exact single years of birth cannot be given. To indicate this point in Table 5* the birth years are stated in pairs.

22. The block of plus signs noted in Table 4* is now seen to relate to persons born between 1935/6 and 1941/2. These are followed by a block of minus signs for those born after 1941/2. This is very unlikely to be due to random factors and this result alone suggests that an explanation is necessary.

General Solution (Females, England and Wales)

23. Before an interpretation is sought it is instructive to examine the pattern of female crime in the same age range for the same years. The total pattern of female crime differs considerably from that for males and the crime rate is very much less. Variations due to chance influences on small numbers are likely to have a much greater effect in the analysis of female crime rates. Detailed workings (which it has been considered unnecessary to reproduce in this report) lead to the results shown in Table 6* which shows percentage differences between the observed and expected rates. It will be noted that the picture is very similar to that for males. There are, however, some interesting exceptions to the general rule and these will be discussed later.

General Solution (Males, Scotland)

24. It is known that the pattern of juvenile offences in Scotland differs considerably from that in England and Wales. The criminal code also differs. If these analyses are revealing anything of fundamental significance the same features might be revealed by a similar analysis of the Scottish statistics.† Unfortunately the Scottish figures cannot readily be obtained for any year prior to 1949. The basic rates which it has been necessary to use for Scotland relate to crimes and offences and thus cover a wider range of delinquency than the category "indictable offences" used for our analysis for England and Wales. Table 7* shows the basic figures and Table 8* the analysis comparable with Table 5* for England and Wales.

25. It will be noted that the pattern of crime and offences by age groups shows that in Scotland youths of seventeen years of age are the most delinquent —three years older than in England and Wales. Why the age peak in Scotland should be later than in England is not known, and the reason cannot now be explored. The age pattern may be different only because the analysis includes different offences, but for our present purpose it is unnecessary to explore further. In view of this basic difference in age pattern it is perhaps surprising to find that after standardising the age, population and total crime in the same way as for England and Wales, the same basic patterns of birth-group delinquency again appear (*see* Table 8).

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* *See* Appendix I.

† We gratefully acknowledge the co-operation of the Scottish Home Department for tabulating their figures and for permission to publish their results.

Comparison of General Solutions

26. We may now collect together the results of the birth group analysis for the three sets of data, males and females in England and Wales, and males in Scotland. For certain birth years only one or two figures are available on which to base the calculation of above or below average delinquency and it is convenient to use the method of moving averages to smooth out any chance variation. A conventional period is the seven year moving average. This period has the additional advantage that it is the same length as World War II. Averaging (over seven years) the figures from Tables 5*, 6* and 8* the following is derived:

Seven year moving average of differences between percentage observed and expected rates

Year of Birth	England and Wales		Scotland
	Males	Females	Males
	%	%	%
1925/6 to 1931/2 . . .	− 4·6	+ 2·9	Not available
1926/7 to 1932/3 . . .	− 3·8	− 0·8	Not available
1927/8 to 1933/4 . . .	− 4·6	− 3·6	Not available
1928/9 to 1934/5 . . .	− 5·3	− 5·0	− 8·7
1929/30 to 1935/6 . .	− 4·2	− 4·4	− 5·8
1930/1 to 1936/7 . . .	− 2·6	− 3·2	− 2·0
1931/2 to 1937/8 . . .	− 1·0	− 1·2	+ 1·9
1932/3 to 1938/9 . . .	+ 2·5	+ 1·7	+ 4·4
1933/4 to 1939/40 . .	+ 5·4	+ 4·4	+ 6·8
1934/5 to 1940/1 . . .	+ 7·9	+ 7·3	+ 7·8
1935/6 to 1941/2 . . .	+ 8·6 (Peak)	+ 8·7 (Peak)	+ 8·3 (Peak)
1936/7 to 1942/3 . . .	+ 7·5	+ 7·7	+ 6·7
1937/8 to 1943/4 . . .	+ 5·1	+ 5·0	+ 4·2
1938/9 to 1944/5 . . .	+ 2·8	+ 3·0	+ 1·5
1939/40 to 1945/6 . .	− 1·1	− 0·3	− 2·5
1940/1 to 1946/7 . . .	− 7·5	− 9·0	− 8·3
1941/2 to 1947/8 . . .	− 13·7	− 16·9	− 12·3
1942/3 to 1948/9 . . .	− 18·7	− 21·1	− 14·3

27. The similarity between the three sets of figures is remarkable. The peak agrees almost exactly in amount as well as in period. The one difference between males and females—for the first noted birth group—may be due to the fact that these figures are based on fewer items than those towards the centre of the table. Unreliability could be expected at the lower end of the table for the same reason.

The Effect of War Period

28. Perhaps the most noteworthy fact revealed by this tabulation is that the peak excess criminality characterises those born in the seven-year period 1935/6 to 1941/2. The war began in September, 1939, and by the middle of 1945 the main effect on this country was over. The main war effect would thus be expected for the years 1940–1945, and for the two-year overlapping periods with which we have to work in this study 1939/40 to 1945/6, but births during this period

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* *See* Appendix I.

show a rate slightly below the twelve-year average. It requires an addition of four years to the years 1935/6–1941/2 to give exactly 1939/45–1945/6. This suggests a different form of analysis to study when the effect of the war was most evident in these data. We may collect figures together so that we have in each group the greatest number of children passing through a given year of age during the war and note the rates for crime that have since characterised these groups. For example, we collect together the greatest number passing through their first year of life during the war by summing births during the period 1939/40 to 1945/6, since by this means the whole war period is included for all cases. Similarly collecting other figures for other ages, the following analysis is derived:

Average percentage by which the observed crime rate differs from that expected when the number of children passing through the war at different ages is maximised

Maxima passing through		England and Wales		Scotland
		Males	Females	Males
First year of life (0–1 year).	during the 1939–45 war	− 1·1	− 0·3	− 2·5
Second year		+ 2·8	+ 3·0	+ 1·5
Third year		+ 5·1	+ 5·0	+ 4·2
Fourth year		+ 7·5	+ 7·7	+ 6·7
Fifth year		+ 8·6 (Peak)	+ 8·7 (Peak)	+ 8·3 (Peak)
Sixth year		+ 7·9	+ 7·3	+ 7·8
Seventh year		+ 5·4	+ 4·4	+ 6·8
Eighth year		+ 2·5	+ 1·7	+ 4·4
Ninth year		− 1·0	− 1·2	+ 1·9

29. The greatest "crime-proneness" is thus found to be associated with that birth group who passed through their fifth year during the war. This is the year immediately preceding school attendance except for the small percentage who attend nursery schools prior to compulsory primary school attendance. Whether this means that disturbed social conditions have their major impact on children between the age of four and five is not proved, but this is a likely hypothesis. It is not clear how any hypothesis which relates the greatest impact of disturbed social conditions to a much earlier age could be consistent with these results.

Critical Ages

30. It is unsafe to make inferences regarding the exact age at which the incidence of the war had most effect because a 1939 birth may have taken place at any time during the year and a 1946 conviction at any time during 1946 and similarly for all birth and conviction years. It is clear, however, that the average crime-proneness rises from a negative figure when the number born during the war is a maximum (i.e., when we have collected together the greatest number of war-time births) to a peak when the maximum relates to those who were between four and five years old during the war. After five years of age the crime-proneness figures drop, reaching again a negative value for those passing through their eighth or ninth year during the war. A large number of theories may equally fit these observations.

31. It is of further support to this result to note that a previous crime-prone group was born in the years 1926/7, 1927/8. The data are, however, limited to a few years. None the less, the addition of four or five years brings this birth group to coincide with the worst part of the depression of the 1930's. The concomitance of these two results seems unlikely to be due to chance. There appears to be something particularly significant in social disturbances occurring in the fourth and fifth year of a child's life.

32. Perhaps the deprivation of mothers is important in very early life and paternal deprivation later, say between four and five years of age? But the depression did not deprive children of parents. Perhaps the simple explanation is that the behaviour of children is influenced by factors in the family and social situation only when they are old enough to recognise social situations as such for themselves and to seek (consciously) to manipulate them. Before the results of this analysis were known this age was assessed to be about four years for the normal child. Prior to 3½ years of age children will play in the same room as their "friends" but not play *together*. Communication of a socially effective kind does occasionally develop before four years and occasionally after four, but these are normal individual differences.(3) War-time and economic depression effects could thus be related to the age at which social communication was beginning to be effective.

General Conclusion

33. Any theories regarding the lasting effects of war-time and other disturbances of the lives of young children must, it seems, accommodate the fact that children *born* during the 1939–45 war have not as yet shown any tendency towards excess criminality. None the less the general theory that some birth years are associated with excessive criminality is sustained by the current analysis. It has been shown that this tendency has applied to both sexes, has remained persistent in the groups concerned from eight to twenty years of age, and applied also in exactly the same way in Scotland, although the pattern of recorded offences was very different from that of England and Wales. Moreover, it seems that disturbances of social or family life had the most marked effect on subsequent criminality if they occurred when the children concerned were passing through their fifth year.

34. There may be many theories explaining the reasons for these observations, but no theory derived from macroscopic statistical data of this kind can be proved by the same statistics as give rise to the theory or cause it to be considered in this connection.

Exception to the General Case

35. It would be unsatisfactory to leave this report at this stage without comment on the exception to the general rule of birth group effects and the agreement between the pattern for males and females. The main exception relates to males who are now between seventeen and twenty-one years of age.

36. One of the most disturbing features of the pattern of post-war criminal statistics is the recent crime wave amongst young adult males between seventeen and twenty-one years of age. The crime wave among males has been associated with certain forms of dress and other social phenomena. It is true that this age group was born before the war (1935/6 to 1938/9) and passed through their

critical ages during the war, but this does not explain the recent trend in their crime pattern. As Tables 5 and 6 show (averages given in last row of table) they are expected to be more crime prone than other age groups and the girls behave according to this expectation. For males, however, the expected proneness, based on their earlier years, is greatly exceeded in 1956 and 1957 when they became young adults. In particular the birth group 1935/6 (nineteen years of age in 1955 and twenty years of age in 1956) were only a little worse than average when they were between eight and sixteen years of age, but in 1956 showed a crime rate 40 per cent above expectation. In 1957 the three birth groups 1936/7 to 1938/9 were particularly crime-prone (+ 30 per cent; + 22 per cent; + 31 per cent). This is far in excess of expectation. The beginning of the young male adult crime problem seems from Table 4 to have been in 1954 when the differences between expected rates and those observed changed from negative (1953) to positive (1954).

37. It seems that this pattern is an example of a wave of a different type from those seen earlier in this birth group, for other birth groups and for females. This seems to indicate that the recent crime wave phenomenon among young males cannot be dismissed as "only to be expected in view of their childhood experiences".* Some increase in criminality might have been expected, but not to the extent found to occur.

Limitations of Study

This study raises more problems than it solves, but this perhaps, is to be expected of most studies at this stage of development in criminology. Many theories could be put forward suggesting explanations of various kinds and many of these theories could be conflicting. It is hoped that some critical tests can be made of some of these at a later date.

References

(1) Bowlby, J. Maternal Care and Mental Health. W.H.O. Geneva (1951).

(2) Andry, R. Delinquency and Parental Pathology. Methuen, London (1960).

(3) This follows from the theories of that school of sociology which stresses the importance of communication, e.g., Bernstein, Basil "A Public Language". B.J. Soc. *x* (4), pp. 311–325.

(4) Lodge, T. S. A Comparison of Criminal Statistics of England and Wales with those of Scotland. Brit. J. Delinquency (1950).

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* It would, of course, be possible to postulate a latent period for the effects of childhood disturbance which are expected to show in behaviour disorder during late adolescence. If this theory could explain also the difference for boys and girls it would not be inconsistent with the present results, but there is no other evidence to support it.

APPENDIX I

TABLE 1

Numbers of male persons 8–20 years of age, found guilty of indictable offences in the years 1946–1956, England and Wales

Year	Age 8	9	10	11	12	13	14	15	16	17	18	19	20	Totals
1946	1,257	2,379	3,333	3,928	4,280	4,734	4,280	5,045	5,023	4,525	3,122	2,688	2,530	47,124
1947	1,283	2,393	3,156	3,668	4,315	4,755	4,067	4,366	4,593	4,144	2,832	2,675	2,466	44,683
1948	1,489	2,900	3,943	4,790	5,474	6,093	6,339	5,011	4,630	4,194	3,035	2,723	2,900	53,521
1949	1,325	2,733	3,762	4,586	5,157	5,601	6,005	5,197	3,926	3,381	2,786	2,232	2,414	48,105
1950	1,435	2,674	4,014	4,885	5,504	6,009	6,494	4,281	3,849	3,565	2,565	2,376	2,460	50,111
1951	1,543	2,828	3,822	5,046	6,200	7,122	7,747	5,144	4,383	4,074	2,988	2,519	2,836	56,252
1952	1,279	2,599	3,531	4,551	5,532	6,697	7,365	5,104	4,624	4,201	2,921	2,573	2,707	53,684
1953	1,238	2,354	3,250	3,864	4,482	5,586	6,219	4,334	3,996	3,650	2,571	2,132	2,324	46,000
1954	991	2,030	2,911	3,510	4,133	4,808	5,629	4,073	3,685	3,361	2,582	2,069	2,140	41,922
1955	1,000	1,962	3,000	3,732	4,452	5,001	5,542	4,135	3,840	3,593	2,881	2,433	2,362	43,933
1956	965	2,140	2,929	3,879	4,957	5,943	6,388	4,356	4,285	4,144	3,446	2,934	2,901	49,267
1957	1,059	2,292	3,636	4,338	5,474	6,898	7,827	5,404	4,918	5,090	4,673	3,772	3,427	58,808
Total	14,864	29,284	41,287	50,777	59,960	69,247	73,902	55,450	51,752	47,892	36,402	31,126	31,467	593,410
Mean	1,239	2,440	3,441	4,231	4,997	5,771	6,158	4,621	4,313	3,991	3,033	2,594	2,622	49,451

TABLE 2

Population estimates (mid-year) for the same age groups and years as Table 1, England and Wales
(All figures × 1,000)

Year	Age 8	9	10	11	12	13	14	15	16	17	18	19	20	Totals
1946	295	287	282	279	274	277	288	294	294	295	275	246	307	3,693
1947	295	296	288	283	280	275	278	288	294	293	275	244	300	3,689
1948	288	293	294	287	282	279	273	277	290	297	274	240	295	3,669
1949	272	288	293	294	286	282	278	272	277	291	278	239	298	3,648
1950	294	271	287	293	294	286	282	278	272	276	272	248	299	3,652
1951	322	294	271	291	295	294	287	281	277	270	266	237	294	3,679
1952	339	321	294	271	290	295	294	287	282	277	248	237	289	3,724
1953	336	339	321	294	271	290	294	294	287	282	249	231	277	3,765
1954	341	339	341	322	293	268	285	290	290	285	263	218	275	3,810
1955	439	341	338	340	322	292	268	285	290	290	276	234	281	3,996
1956	392	439	341	338	340	322	292	267	284	209	283	243	230	4,060
1957	365	391	438	340	338	340	321	293	268	286	289	260	256	4,185
Total	3,978	3,899	3,788	3,632	3,565	3,500	3,440	3,406	3,405	3,431	3,248	2,877	3,401	45,570
Mean	331	325	316	303	297	292	287	284	284	286	271	240	283	3,797

Footnote.—In the years immediately following the war the Registrar-General did not show the population serving in H.M. Forces overseas separately from the total population. An adjustment has been made in the above figures (but not on the Criminal Statistics for these years) based on the proportion overseas for the nearest years, for which the separate figures were available.

TABLE 3

Rates (per 100,000 of the related population) for males aged 8–20 years of age found guilty of indictable offences in the years 1946–57, England and Wales

Year	Age													Average Rate	Rate directly calculated
	8	9	10	11	12	13	14	15	16	17	18	19	20		
1946	426	829	1,182	1,408	1,562	1,709	1,486	1,716	1,708	1,534	1,135	1,093	824	1,278	1,276
1947	435	808	1,096	1,296	1,541	1,729	1,463	1,516	1,562	1,404	1,030	1,096	822	1,215	1,211
1948	517	990	1,341	1,669	1,941	2,184	2,322	1,809	1,597	1,412	1,108	1,135	983	1,462	1,459
1949	487	949	1,284	1,560	1,803	1,986	2,160	1,543	1,417	1,162	1,002	934	810	1,315	1,319
1950	488	987	1,399	1,667	1,872	2,101	2,303	1,540	1,415	1,292	933	958	823	1,368	1,371
1951	479	962	1,410	1,734	2,102	2,422	2,699	1,831	1,582	1,509	1,123	1,063	965	1,529	1,529
1952	377	810	1,201	1,679	1,908	2,270	2,505	1,778	1,640	1,517	1,178	1,086	937	1,453	1,442
1953	368	694	1,012	1,314	1,654	1,926	2,115	1,474	1,392	1,294	1,033	923	839	1,234	1,222
1954	291	599	854	1,090	1,411	1,794	1,975	1,404	1,271	1,179	982	949	778	1,121	1,100
1955	228	575	888	1,098	1,383	1,713	2,068	1,451	1,324	1,239	1,043	1,040	841	1,145	1,099
1956	246	487	859	1,148	1,458	1,846	2,188	1,631	1,509	1,434	1,218	1,207	1,261	1,269	1,213
1957	290	586	840	1,275	1,620	2,029	2,438	1,844	1,835	1,780	1,617	1,451	1,339	1,456	1,405
Average	386	773	1,113	1,411	1,688	1,976	2,143	1,628	1,521	1,396	1,117	1,078	935	1,320	

TABLE 4

Percentage by which the observed crime rate for males for each age and each year was greater or less than the expected rate for that age and year, England and Wales

Year	Males aged 8	9	10	11	12	13	14	15	16	17	18	19	20
1946	+13·9	+10·8	+ 9·7	+ 3·1	− 4·3	−10·6	−28·4	+ 8·9	+16·0	+13·5	+ 5·0	+ 4·8	− 9·0
1947	+22·5	+13·6	+ 7·0	− 0·2	− 0·8	− 4·9	−25·8	+ 1·2	+11·6	+ 9·3	+ 0·2	+10·5	− 4·5
1948	+21·1	+15·7	+ 8·8	+ 6·8	+ 3·9	− 0·2	− 2·2	+ 0·3	− 5·2	− 8·7	−10·4	− 4·9	− 5·1
1949	+26·8	+23·2	+15·8	+11·0	+ 7·3	+ 0·9	+ 1·2	− 4·9	− 6·5	−16·5	− 9·9	−13·0	−13·0
1950	+22·0	+23·2	+21·3	+14·0	+ 7·1	+ 2·7	+ 3·7	− 8·7	−10·2	−10·7	−19·4	−14·2	−15·1
1951	+ 7·2	+ 7·5	+ 9·4	+ 6·1	+ 7·5	+ 5·9	+ 8·7	− 2·9	−10·2	− 6·7	−13·1	−14·8	−10·9
1952	−11·3	− 4·7	− 2·0	+ 8·1	+ 2·7	+ 4·4	+ 6·2	− 0·7	− 2·0	− 1·2	− 4·1	− 8·4	− 8·9
1953	+ 1·9	− 3·9	− 2·7	− 0·4	+ 4·9	+ 4·3	+ 5·6	− 3·1	− 2·0	− 0·8	− 1·0	− 8·3	− 4·0
1954	−11·3	− 8·7	− 9·6	− 9·1	− 1·5	+ 6·9	+ 8·5	+ 1·5	− 1·6	− 0·6	+ 3·6	+ 3·7	− 2·0
1955	−31·9	−14·2	− 8·0	−10·3	− 5·5	− 0·1	+11·2	+ 2·8	+ 0·4	+ 2·3	+ 7·6	+11·2	+ 3·7
1956	−33·7	−34·5	−19·6	−15·3	−10·1	− 2·7	+ 6·3	+ 4·3	+ 3·3	+ 6·9	+13·5	+16·5	+40·4
1957	−31·9	−31·3	−32·4	−18·1	−13·0	− 6·9	+ 3·1	+ 2·7	+ 9·4	+15·6	+31·3	+22·0	+29·9

TABLE 5

Percentage by which the observed crime rate for males for each year (1946–1957) was greater or less than the expected rate for the birth group years, England and Wales

(Table 4 re-arranged by birth groups)

Year	Males born in the years																							
	1925/26	1926/27	1927/28	1928/29	1929/30	1930/31	1931/32	1932/33	1933/34	1934/35	1935/36	1936/37	1937/38	1938/39	1939/40	1940/41	1941/42	1942/43	1943/44	1944/45	1945/46	1946/47	1947/48	1948/49
1946	− 9·0	+ 4·8	+ 5·0	+13·5	+16·0	+ 8·9	−28·4	−10·6	− 4·3	+ 3·1	+ 9·7	+10·8	+13·9											
1947		− 4·5	+10·5	+ 0·2	+ 9·3	+11·6	+ 1·2	−25·8	− 4·9	− 0·8	− 0·2	+ 7·0	+13·6	+22·5										
1948			− 5·1	− 4·9	−10·4	− 8·7	− 5·2	+ 0·3	− 2·2	− 0·2	+ 3·9	+ 6·8	+ 8·8	+15·7	+21·1									
1949				−13·0	−13·0	− 9·9	−16·5	− 6·5	− 4·9	+ 1·2	+ 0·9	+ 7·3	+11·0	+15·8	+23·2	+26·8								
1950					−15·1	−14·2	−19·4	−10·7	−10·2	− 8·7	+ 3·7	+ 2·7	+ 7·1	+14·0	+21·3	+23·2	+22·0							
1951						−10·9	−14·8	−13·1	− 6·7	−10·2	− 2·9	+ 8·7	+ 5·9	+ 7·5	+ 6·1	+ 9·4	+ 7·5	+ 7·2						
1952							− 8·9	− 8·4	− 4·1	− 1·2	− 2·0	− 0·7	+ 6·2	+ 4·4	+ 2·7	+ 8·1	− 2·0	− 4·7	−11·3					
1953								− 4·0	− 8·3	− 1·0	− 0·8	− 2·0	− 3·1	+ 5·6	+ 4·3	+ 4·9	− 0·4	− 2·7	− 3·9	+ 1·9				
1954									− 2·0	+ 3·7	+ 3·6	− 0·6	− 1·6	+ 1·5	+ 8·5	+ 6·9	− 1·5	− 9·1	− 9·6	− 8·7	−11·3			
1955										+ 3·7	+11·2	+ 7·6	+ 2·3	+ 0·4	+ 2·8	+11·2	− 0·1	− 5·5	−10·3	− 8·0	−14·2	−31·9		
1956											+40·4	+16·5	+13·5	+ 6·9	+ 3·3	+ 4·3	+ 6·3	− 2·7	−10·1	−15·3	−19·6	−34·5	−33·7	
1957												+29·9	+22·0	+31·3	+15·6	+ 9·4	+ 2·7	+ 3·1	− 6·9	−13·0	−18·1	−32·4	−31·3	−31·9
Average	− 9·0	+ 0·2	+ 3·5	− 1·1	− 2·6	− 3·9	−13·1	− 9·9	− 5·3	− 1·0	+ 6·0	+ 7·8	+ 8·3	+11·4	+10·9	+11·6	+ 4·3	− 2·1	− 8·7	− 8·6	−15·8	−32·9	−32·5	−31·9

Maximum group born 1935–1941/2

TABLE 6

Percentage by which the observed crime rate for females for each year (1946–1957) was greater or less than the expected rate for the birth group years, England and Wales

Year	Females born in the years																							
	1925/26	1926/27	1927/28	1928/29	1929/30	1930/31	1931/32	1932/33	1933/34	1934/35	1935/36	1936/37	1937/38	1938/39	1939/40	1940/41	1941/42	1942/43	1943/44	1944/45	1945/46	1946/47	1947/48	1948/49
1946	+16·9	+12·3	+13·2	+1·7	−3·4	−7·5	−13·5	−12·6	−12·2	+2·9	+1·3	+10·9	+36·8											
1947		+16·4	+9·6	+5·0	−3·2	+2·1	−2·1	−16·8	−6·1	−8·7	+6·3	+11·3	−4·0	+5·0										
1948			+4·9	−9·2	+1·9	−8·6	−9·1	−4·6	+1·8	+0·0	+6·9	+9·9	+10·6	+13·8	+29·2									
1949				−2·2	−8·1	−4·1	−8·3	−5·0	+0·6	−2·2	−1·7	+9·1	+6·5	+16·9	+29·2	+35·0								
1950					−0·7	−9·1	−10·7	−8·1	−1·1	+2·2	+9·6	−2·3	+0·7	+5·4	+13·9	+22·0	+35·0							
1951						−12·1	−8·5	−11·0	−9·0	−5·0	−4·0	+0·5	+7·9	+16·4	+10·9	+28·2	+26·4	−9·1						
1952							−16·7	−3·8	−13·0	−1·4	−4·3	−1·0	+4·2	+11·5	+12·0	+10·4	+13·5	−3·6	−8·7					
1953								−11·2	−2·9	−3·8	+7·9	+4·7	−1·1	−4·1	+3·3	+7·9	+0·0	−3·7	−2·0	−4·8				
1954									−3·0	+4·4	+5·3	+3·9	+5·0	+1·1	+8·8	+4·1	−6·3	−17·0	−23·7	+0·0	−36·8			
1955										+3·2	+10·0	+8·8	+6·5	+3·0	+0·6	+4·7	+3·1	−15·0	−16·0	−18·1	−15·9	−38·9		
1956											−4·0	+4·8	+4·4	+8·4	+4·8	+13·9	+0·0	−5·0	−8·3	−3·0	−11·3	−40·9	−33·3	
1957												+12·4	+5·5	+7·4	+15·2	+10·8	+4·4	−7·0	−3·4	−8·9	−22·7	−46·8	−46·9	−20·0
Average	+16·9	+14·4	+9·2	−1·2	−2·7	−6·6	−9·8	−9·1	−5·0	−0·8	+3·0	+6·1	+6·9	+7·7	+12·8	+15·2	+9·5	−6·6	−10·4	−7·0	−21·7	−42·2	−40·1	−20·0

Maximum group born 1935/6–1941/2

TABLE 7

Rates (per 100,000 of the related population) for males aged 8–20 years of age found guilty of crimes or offences in the years 1949–1957, Scotland

Year	Age 8	9	10	11	12	13	14	15	16	17	18	19	20	Total
1949	1,118	2,256	3,105	3,581	4,602	5,589	6,235	6,403	7,427	8,710	7,225	5,742	6,543	68,535
1950	1,253	2,175	3,438	3,849	4,800	5,537	6,425	6,547	7,668	9,018	7,564	6,087	6,737	71,098
1951	1,068	2,372	3,098	3,918	4,924	5,530	6,501	6,829	7,661	9,019	7,334	7,044	6,649	71,947
1952	1,026	1,990	2,939	3,614	4,763	5,359	6,523	6,509	7,748	8,818	7,484	7,029	7,000	70,802
1953	1,035	1,879	2,650	3,309	4,143	5,435	6,260	6,791	7,958	8,468	7,409	7,213	7,802	71,432
1954	852	1,869	2,507	3,135	3,785	4,935	6,328	6,637	7,698	9,396	8,756	7,670	8,134	71,702
1955	755	1,702	2,607	2,885	3,657	4,845	6,187	6,726	7,925	9,599	9,512	8,439	8,685	73,524
1956	826	1,385	2,283	2,916	3,652	4,871	6,000	6,448	8,268	10,016	11,046	9,564	9,765	77,040
1957	1,020	1,695	2,170	2,919	3,726	5,017	6,125	6,529	8,472	11,551	12,806	11,493	11,200	84,723
Average	995	1,925	2,755	3,347	4,228	5,235	6,287	6,602	7,869	9,511	8,793	7,809	8,066	73,423

TABLE 8

Percentage by which the observed crime rate for males for each year (1948–1957) was greater or less than the expected rate for birth group years, Scotland

Year	Males born in the years																				
	1928/29	1929/30	1930/31	1931/32	1932/33	1933/34	1934/35	1935/36	1936/37	1937/38	1938/39	1939/40	1940/41	1941/42	1942/43	1943/44	1944/45	1945/46	1946/47	1947/48	1948/49
1949	−13·1	−21·2	−12·0	−1·9	+1·1	+3·9	+6·2	+14·4	+16·6	+14·6	+20·7	+25·5	+20·3								
1950		−13·7	−19·5	−11·2	−2·1	+0·6	+2·4	+5·5	+9·2	+17·2	+18·8	+28·9	+16·7	+30·1							
1951			−15·9	−7·9	−14·9	−3·2	−0·6	+5·6	+5·5	+7·8	+18·9	+19·5	+14·7	+25·8	+9·5						
1952				−10·0	−6·7	−11·7	−3·8	+2·1	+2·2	+7·6	+6·2	+16·8	+12·0	+10·6	+7·2	+7·0					
1953					+0·4	−5·1	−13·4	+2·3	+3·9	+5·7	+2·3	+6·7	+0·7	+1·6	−1·2	+0·3	+6·9				
1954						+3·3	+0·6	+2·0	+1·2	+0·2	+2·9	+3·1	−3·5	−8·3	−4·1	−6·8	−0·6	−12·3			
1955							+7·5	+7·9	+8·0	+0·8	+0·6	+1·7	−1·7	−7·6	−13·6	−13·9	−5·5	−11·7	−24·2		
1956								+15·4	+16·7	+16·7	+0·4	+0·1	−6·9	−9·0	−11·3	−17·7	−17·0	−21·0	−31·4	−20·0	
1957									+20·3	+27·5	+22·3	+5·3	−6·7	−14·3	−15·6	−17·0	−23·6	−24·4	−31·7	−23·7	−11·1
Average	−13·1	−17·5	−15·8	−7·8	−4·4	−2·0	−0·2	+6·9	+9·3	+11·2	+10·3	+12·0	+5·1	+3·2	+4·2	−8·0	−8·0	−17·4	−29·1	−22·3	−11·1

Maximum group born 1935/36–1941/42

APPENDIX II

METHOD USED FOR CALCULATING EXPECTED RATES

The expected rate for any age-group (j) in any year (i) was assumed to be given by:

$$E_{ij} = \frac{\sum\limits_{i=1}^{m} r_{ij} \; \sum\limits_{j=1}^{n} r_{ij}}{\sum\limits_{i=1}^{m} \; \sum\limits_{j=1}^{n} r_{ij}}$$

When i = year
m = no. of years
j = age-group
n = no. of age-groups
in Table 3

The formula is equivalent to:

$$E_{ij} = \frac{\text{Average rate for year i (all ages)}}{\text{Average rate for all years (all ages)}} \times \text{Average rate for age-groups (all years)}$$

It is derived as follows:

Rate for age-group j in year i $= r_{ij}$

Average rate for all age-groups in year i $= \dfrac{\sum\limits_{j=1}^{n} r_{ij}}{n}$ . . . . . . (1)

Average rate for age-group j in all years $= \dfrac{\sum\limits_{i=1}^{m} r_{ij}}{m}$ . . . . . . (2)

Average rate for all age-groups in all years (either the average of (1) for m years or the average of (2) for n age-groups $= \dfrac{\sum\limits_{i=1}^{m} \; \sum\limits_{j=1}^{n} r_{ij}}{mn}$ . . . . . (3)

$$E_{ij} = \frac{(1) \times (2)}{(3)} = \frac{\sum\limits_{i=1}^{m} r_{ij} \; \sum\limits_{j=1}^{n} r_{ij}}{\sum\limits_{i=1}^{m} \; \sum\limits_{j=1}^{n} r_{ij}}$$

Example:

Age 19 in 1955

Average rate for age 19 = 1,044 }
Average rate for 1955 = 1,145 } from Table 3
Average rate for whole table = 1,308 }

$E = \dfrac{1{,}044 \times 1{,}145}{1{,}308}$ = 914

O = Actual rate = 1,040

Excess $= \dfrac{O - E}{E} \times 100$ =

$= \dfrac{1{,}040 - 914}{914} = 100$ = + 13·8

as in Table 4

(in actually calculating the table, of course, intermediate averages were not used; the formula was used as it stands.)

The expected number of offenders could have been obtained by a similar calculation from Table 1, and the expected rate could have been derived by relating this to the actual population given in Table 2.

(81439) Wt. 3905/822 K.20 12/60 Hw.